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It will be noted that typhoid morbidity in the United States rises regularly from a minimum in February to a maximum in September, while in Cuba the minimum is in October, and the maximum in April, forming almost a complementary curve. In Porto Rico and the Philippines the curve would be less smooth, but in both cases the highest rates lie between May and July, with the smaller values at the end of the year. The curve for diarrhoeal diseases would be exactly similar but somewhat more even on account of the greater number of cases. The final tables at the end of the Surgeon-General's report furnish striking evidence of the dangers of tropical service in the comparison of various rates with those of the army for the decade, 1888-1897. Thus the admissions for diseases per 1000 mean strength of the total army were 2006 in 1898, 1987 in 1899, and 893 in the previous decade. The death rates from all diseases were 25.0, 11.8, and 4.5 for the corresponding periods. The admission rates for typhoid fever were 141.6, 20.7, and 4.9; for yellow fever they were 7.9, 2.5, and .03; for intermittent malarial fever they were 413.7, 391.1, and 62.8.

C.-E. A. W.

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#### NOTES ON VITAL STATISTICS.

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The *Thirty-sixth Annual Report of the Registrar-General of Ireland* for 1899 contains, like all the English blue-books, much valuable material. Of special interest is the tabulation of marriages according to the mode of celebration, and the ratios of the same to the corresponding estimated populations, because such data are rarely obtainable. The marriage rate for Roman Catholics has ranged from 4.04 to 4.62 since 1889, with an average of 4.34. The corresponding average rate for members of the church of Ireland and Protestants is 6.12, with extremes of 5.80 and 6.53. The reviewer is at a loss to say whether this striking and constant discrepancy is due to some error in the collection of data or whether it indicates some correlation between religious faith and racial character, or economic conditions. A curious difference in seasonal distribution is brought out in the table giving the marriages by quarterly periods. For Roman Catholics the equivalent annual rate for the four quarters of the year for ten years,

1889-1898, averaged as follows: 6.4, 3.8, 3.6, 3.6. For all other marriages the corresponding figures were 5.2, 6.0, 6.5, 6.6. The diagram in the report which shows the mortality from twenty-two causes of death during the year throws some discredit on the system of registration,—because old age occupies the first place on the list being credited with a total of 14,216 deaths. As vital statistics improve this cause of death steadily declines in apparent importance.

Dr. Symons, Medical Office of Health of Bath, England, in an article on *Local Statistics* in the February, 1900, number of *Public Health* notes the importance of referring birth and death rates to special age and sex groups, rather than to the total population. He points out that in Bath there are only 275 children under 15 years of age to each thousand of population, while in England and Wales there are 351; therefore, death rates for children's diseases if referred to total population should be corrected by a factor of 1.275. Again, there are only 154 "young married women" in Bath as against 170 in England and Wales, so that marriage rates should be multiplied by 1.105.

Dr. Thomas Oliver in an address on the *Physiology and Pathology of Inheritance*, published in *The Lancet* for November 10, 1900, gives some statistics for tuberculosis derived from several insurance companies on both sides of the Atlantic. The records of the New York Mutual Life Insurance Company show that the ratio of deaths from tuberculosis to total deaths, in families without consumptive history, fell from 35.8 under 29 years of age to 26.3 between 30 and 39 years, and to 17.6 between 40 and 49 years. In families with such history, on the other hand, the corresponding figures were 51.6, 39.6, and 24.6. The conclusion from these tables is that a family history of phthisis indicates an increased liability to this disease of 30 per cent up to the age of 50. The statistics of the Scottish Widows' Fund, on the contrary, show less difference, the percentage of consumptives among children of phthisical and non-phthisical parents being 8 and 7, respectively. Statistics of insurance companies can, however, only be interpreted by one familiar with the exact conditions which govern their collection in the individual case.

A brief but valuable paper by Sir H. R. Beevor, M.D., in the *British Medical Journal* for August 18, 1900, is on the subject of "Rural phthisis and the insignificance of case-to-case infection." The author discusses the death rate for this disease in the eighteen rural districts of Norfolk county for the three decennia from 1861 to 1890 in the population between the ages of 25 and 45. He shows by a table and a diagram that in almost every instance there has been a marked fall between each period. The first five districts, taken alphabetically, give, for instance, the following results:—

1861-70.	1871-80.	1881-90.
4.27	3.09	2.70
4.00	3.33	2.45
3.43	2.81	2.46
3.36	2.57	2.53
4.39	3.57	2.38

The striking fact, however, is the constancy of rate in each period among the different districts,—that is, the variation between the rates for different periods in the same district were much greater than the variations between different districts in the same period. The author draws the just conclusion that general sanitary conditions which affect all these districts alike have played a greater part than infection which must have varied with the locality. In other words, phthisis is a disease in which the germ is widespread and the factor of vital resistance occupies a prominent place.

The Year-book of the Health Department, of the city of Ghent contains some interesting compilations of the death rates, for 1899, of various European cities, ranging from Amsterdam, 15.3; through Hamburg, 17.4; Berlin, 18.8; London, 19.2; Dresden, 19.5; Paris, 20.1; Vienna, 20.7; Venice, 22.8; and St. Petersburg, 24.7, to Rouen, 29.6. Another table gives the death rate from tuberculosis in forty-nine cities, of which the following may be quoted: Liège, 1.69; London, 1.79; Rome, 2.20; Berlin, 2.38; New York, 2.80; New Orleans, 3.78; Paris, 3.92; Nuremberg, 4.70. No authority is given for these figures. A diagram at the end of the report indicates the relative intensity of certain causes of disease in a rather striking fashion, each cause being represented by a segment of a circle and a separate circle representing each month.

Clément Juglar in a brief communication to the *Journal de la Société de Statistique de Paris* (November, 1900, p. 386) criticises the expression of birth rate, as referred to total population, as calculated to obscure the true relations of things. He points out that quite considerable differences in actual numbers of births are reduced by this ratio to slight variations in the first place of decimals. He objects also to the masking of yearly differences by combinations into five and ten-year periods and maintains that a consideration of the actual figures for a long period of years, and especially of the maxima and minima, can give the only just idea of the progress of affairs. M. Juglar illustrates his system by analysis of the figures for births in France from which he draws alarming conclusions. This illustration detracts considerably from the author's argument, because it shows how easy it is by comparing the maximum of three years at one period with the maximum of ten years at another, and the actual number of births in one year with the maximum of a previous period and by disregarding the population, to prove anything whatever. The method commonly used may not be spectacular, but it is reasonably safe.

The *Journal de la Société de Statistique de Paris* for May, 1900, contains an interesting addition to the growing list of studies which aim to connect statistics of births and marriages with economic conditions. The author, Clément Juglar, refers to a table of marriages in Switzerland presented at a previous meeting of the society by Fahlbeck, and points out the falling off in marriage rate due to the Crimean war, Civil war in the United States, the panics of 1873 and 1882, and the Baring failure of 1890. Juglar then gives a table which shows the effect of these latter disturbances in France and England, in Paris and London, on marriages and legitimate births. In the year of the panic, or the financial crisis, the marriage and birth rates reach a maximum, and in the succeeding period of depression fall to a minimum. The French marriage rate, for instance, was 352 in 1873, 278 in 1879, 289 in 1882, 269 in 1886, 290 in 1890, and 282 in 1895. The table is unfortunately not given in full, only the extreme points being tabulated, but the author states that the curve between the points is a regular one.

The *Forty-sixth Registration Report of the State of Rhode Island*, for 1898, is marked by the adoption of the geometrical ratio for the calculation of population. Besides the usual routine material there is given a tabulation of the deaths for forty-six years by occupations, with the average ages of decedents. Such data are not of great value for specific avocations; first, because the base for calculation is too small; and second, because many of the occupations recorded presuppose a more or less definite age. Thus, it is not surprising that the average age of decedents, classed as "judges and justices," as "sextons," and as "sea captains or ship-masters," should be high; or that the corresponding figures for "ball players," "students," and "actresses" should be low. The figures for groups of occupations are of interest, however, although the system of grouping used in this case is neither clear nor logical. The average ages of decedents in the groups adopted, from June 1, 1852, to December 31, 1898, were as follows: Tillers of the soil, 66.69; optional activity, 55.91; professional and personal, 54.00; outdoor, local, 53.27; indoor, active, 50.71; occupations at large, 49.32; indoor, activity restricted, 45.04. Another valuable table shows the ratio of male and female births by years since 1864. The ratio of males born to 100 females ranges from 100.3 to 112.9, and averages 104.8. In colored children, on the other hand, the ratio, since 1886, has averaged 97.0. The classification of causes of death adopted in this report is a most excellent one, and is referred to more at length elsewhere.

The *Monthly Bulletin of Vital Statistics of the Michigan State Board of Health*, for November, 1900, is noteworthy for the attempt at a partial registration of morbidity in the towns and other registration districts of that State. The presence of cases of pulmonary tuberculosis, diphtheria, scarlet fever, measles, small-pox, typhoid fever, whooping cough, and cerebro-spinal meningitis in any city, village or township is indicated by the letter "s" in the proper column. This innovation must prove of great value for practical purposes; its statistical importance would be vastly increased if it could be made quantitative.

The *Thirty-first Annual Report of the State Board of Health of Massachusetts*, for the year 1899, contains many indications of encourag-

ing sanitary progress. The mortality from typhoid fever shows a falling off as follows : —

DEATH RATE PER 1,000 INHABITANTS.

	1871-75.	1876-80.	1881-85.	1886-90.	1891-95.	1896-99.
In the cities .....	8.2	4.2	5.1	4.6	3.4	2.6
In the whole state.....	8.2	4.5	5.0	4.1	3.2	2.5

The death rate from consumption has fallen with similar steadiness from 41.1 in 1851-55, to 34.6 in 1871-75, to 23.1 in 1891-95, and 21.7, 20.8, 19.4 and 18.7, respectively, in the four years, 1896, 1897, 1898 and 1899. The ratio of reported deaths from consumption to deaths from all causes has fallen since 1890 from 130.0 to 99.5. As usual a valuable chapter of the report is devoted to the fatality from certain infectious diseases. The fatality from typhoid fever in 1899 was 17.7, a little below the average of the years, 1891-99, which is 18.9. The average fatality of scarlet fever for the latter period has been 5.3, and that for measles, 1.2. The diphtheria statistics are grouped in two tables; in the pre-antitoxin period, 1891-94, the fatality was 28.3; in the period, 1895-99, it was 14.9. Similar figures from the English local government board are given for comparison. They are somewhat higher, except for typhoid fever; all such figures are probably excessive on account of the uncertain reporting of light cases.

The *Annual Report of the Department of Public Health of Newark, N.J.*, for 1899, contains somewhat fuller statistical information than has previously been published by that city, in particular tables of reported cases of infectious diseases by months, which show the connection between diphtheria and scarlet fever and the school year, and that between water-borne typhoid fever and spring floods. The value of the table of deaths by ages is diminished in value, because ages from "twenty to sixty years" are massed together. The following table showing the value of diphtheria antitoxin is interesting as showing the advantage of the treatment and also an apparent diminution in the natural virulence of the disease : —

## PER CENT OF DEATHS TO CASES.

Year.	Antitoxine Used.	Antitoxine Not Used.
1895	13	23
1896	12	31.4
1897	11	18.7
1898	10.5	17.4
1899	8.7	14.5

In the *Annual Report of the Health Department of Louisville, Ky.*, for the year ending August 31, 1900, are tables of mortality from contagious diseases compared to the cases of such diseases reported. The ratio of 417 deaths from consumption to 195 cases reported forcibly illustrates the difficulty of securing notification in this disease. A table of the comparative mortality in various cities in the United States for 1899 is given in this report, which shows the advantage of a liberal estimate of population in securing a low death rate. Some of the lowest death rates may be quoted with the populations on which they were calculated and the actual populations in 1900:—

City.	Death Rate. 1899.	Estimated Population. 1899.	Actual Population. 1900.
St. Paul.....	6.43	215,582	163,065
Omaha.....	6.86	140,000	102,555
Minneapolis.....	8.74	225,602	202,718
Indianapolis.....	10.83	195,000	169,164
Cincinnati.....	13.74	405,000	325,902

Few municipal documents furnish as much information in as clear and concise a form as the *Biennial Reports of the Department of Health of the City of Chicago*. The report for 1897 and 1898, besides full tabulation of statistics for those years, contains a chronological summary of the period, 1851–1898, giving monthly deaths from the more important causes for that period with annual ratios to the population and to the total mortality. The tables are supplemented by diagrams in most cases. The ratio of deaths from a specified disease to the total mortality is helpful and makes clear the contrast between the diseases which are increasing and those which are decreasing. The following table is compiled from a number of those given to illustrate this contrast:—



PERCENTAGE OF TOTAL MORTALITY.

Year.	1894.	1895.	1896.	1897.	1898.
Cancer and sarcoma . . . . .	2.69	2.82	3.16	3.55	3.91
Consumption . . . . .	9.01	8.96	9.96	10.00	10.60
Pneumonia . . . . .	6.39	9.74	9.23	9.87	10.86
Heart disease . . . . .	4.32	5.39	5.30	6.25	6.13
Typhoid fever . . . . .	2.06	2.14	3.23	2.00	2.79
Diphtheria . . . . .	3.53	5.87	4.12	3.22	2.73
Scarlet fever . . . . .	0.79	0.32	0.23	0.37	0.29
Diarrheal diseases . . . . .	12.28	6.77	6.31	5.64	3.73

Dr. C. A. Lindsley, Superintendent of Registration of Vital Statistics in the state of Connecticut, in his report appended to that of the State Board of Health for 1899 finds cause for congratulation in the workings of a new law regulating the collection of vital statistics. This law does not change the general system which has required reports from doctors, clergymen, justices, midwives, sextons, undertakers, etc., for over forty years, but it provides for a legal county officer whose duty it is to see that the registration laws are obeyed. This provision has "doubled the value of registration and in some towns increased it tenfold." The Connecticut records go back to 1848, forming the longest series in this country, except those of Massachusetts, which extend to 1842. The Connecticut tables, published each year, are very extensive, including births, marriages and deaths by sex, nativity, and parentage; births and deaths by sexes and months; deaths by towns nosologically arranged; total deaths for ten years nosologically arranged; deaths in towns by ages and by months; births and deaths in towns by nationality; deaths by months; age and sex nosologically arranged; occupations and ages of decedents; illegitimate and plurality births and still-births by months and sexes; and various special tables of the zymotic diseases. Of the latter, one of the most significant gives the percentage of mortality from typhoid fever to total mortality in the towns of over 20,000 inhabitants. The ratio for the state is 1.3 per cent, that for the nine large towns is 1.7 per cent. The ratios in Waterbury and Hartford, with water supplies taken in whole or in part from highly polluted streams, were 2.9 per cent and 2.4 per cent, respectively. One may suggest that it is a pity the Connecticut board does not conform to the more logical, and now more general custom, of excluding the still-births from the total record of the births.

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